Louisiana Department of Environmental Quality (LDEQ)
Office of Environmental Services

STATEMENT OF BASIS

OxyChem Convent Facility
Draft Initial Part 70 Permit
Occidental Chemical Corporation – Basic Chemicals Group (OxyChem)
Convent, St. James Parish, Louisiana
Agency Interest Number: 3544
Activity Number: PER19960001
Draft Permit: 2560-00019-V1

I. APPLICANT:

Company:
Occidental Chemical Corporation – Basic Chemicals Group (OxyChem)
7377 Highway 3214
Convent, LA 70723

Facility:
OxyChem Convent Facility
7377 Highway 3214
Convent, St. James Parish, Louisiana 70723
Approximate UTM coordinates are 709.10 kilometers East and 3,327.30 kilometers North, Zone 15

II. CURRENT PERMIT STATUS AND FACILITY DESCRIPTION:

Current Permit Status

Occidental Chemical Corporation – Basic Chemicals Group (OxyChem) owns and operates a Chlor-Alkali/Ethylene Dichloride (EDC) manufacturing facility (OxyChem Convent Facility) in Convent, St. James Parish, Louisiana. The facility was originally constructed in 1981. The facility has had several owners since its construction. Several construction/operating permits have been issued to the facility as follows: State Permit No. 999 issued on July 25, 1978 to HCC Chemical Company, Inc.; PSD-LA-108 issued on March 16, 1979; State Permit No. 1460 issued on November 6, 1980 to B. F. Goodrich Company, Chemical Group; PSD-LA-326 issued on November 24, 1980; State Permit No. 1799T issued on January 1, 1982 to Occidental Electrochemical Corp.; PSD-LA-326 (M-1) issued on April 18, 1985; State Permit No. 1460 M-1 issued on May 21, 1985 to B. F. Goodrich Company, Chemical Group; Consolidated Air Permit No. 2560-00019-01 issued on April 22, 1990 to Occidental Chemical Corp.; Consolidated Air Permit No. 2560-00019-02 issued on March 22, 1993 to Occidental Chemical Corp.; Consolidated Air Permit No. 2560-00019-03 issued on November 3, 1993 to Occidental

Chemical Corp.; Consolidated Air Permit No. 2560-00019-04 issued on August 12, 1994 to Occidental Chemical Corp.; Part 70 Permit No. 2560-00019-V0 issued on June 8, 2000 to Occidental Chemical Corp.; PSD-LA-650 issued on June 8, 2000 to Occidental Chemical Corp.; and Acid Rain Permit No. 2560-00019-IV0 issued on August 1, 2000 to Occidental Chemical Corp.

The OxyChem Convent Facility currently operates under the LDEQ Consolidated Air Permit No. 2560-00019-04, issued on August 12, 1994, and PSD-LA-108, issued on November 6, 1980. Part 70 Permit No. 2560-00019-V0 and Permit No. PSD-LA-650, both issued on June 8, 2000, and Acid Rain Permit No. 2560-00019-IV0 issued on August 1, 2000, were issued for a co-generation project which was not built; these permits were therefore terminated on April 1, 2003.

This is the initial Part 70 air operating permit (Permit No. 2560-00019-V1) for the OxyChem Convent Facility.

Facility Description

The OxyChem Convent Facility consists of three basic operations: a Chlor-Alkali Plant utilizing modified asbestos diaphragm cells to produce 876 MM lbs/yr of chlorine and 989 MM lbs/yr of 50% sodium hydroxide, an ethylene dichloride (EDC) Plant utilizing direct chlorination technology to produce 1,679 MM lbs/yr of EDC, and steam generating facilities that provide support to the Chlor-Alkali and EDC Plants.

The **Chlor-Alkali Plant** utilizes modified asbestos diaphragm cell technology to produce chlorine, sodium hydroxide (caustic soda), and hydrogen. In diaphragm cell technology, impurities (calcium and magnesium) are removed from brine (salt water) through precipitation and filtration. An electric current is then applied to the brine in electrolytic cells. Chlorine forms on the anode, and sodium hydroxide and hydrogen gas are formed on the cathode. A modified asbestos diaphragm separates the anode and cathode, as well as the products of electrolysis.

The chlorine gas is dried, cooled, and compressed. A portion of the chlorine gas is liquefied and then either stored or transported to customers by railcar. The remaining chlorine gas is fed directly to the EDC Plant via piping, greatly reducing the possibility of fugitive leaks and emissions.

The sodium hydroxide is concentrated by evaporation, filtered to meet specifications, and then transported to customers by ship, barge, tank truck, or railcar. The OxyChem Convent Facility has an existing truck loading facility, marine dock, and rail lines.

The hydrogen gas produced by the Chlor-Alkali Plant is either sold or used onsite as fuel. If sold, the hydrogen gas is transported directly to the customer via pipeline.

If the Chlor-Alkali Plant reduces production rates or ceases operation because of a shutdown of the EDC Plant or for any other reason, chlorine gas will be routed to the Emergency Chlorine Neutralization Tanks, EIQ No. 4-78, where it will be neutralized. The tanks are large enough to accommodate all of the chlorine not liquefied in the Chlor-Alkali Plant.

The **EDC Plant** utilizes direct chlorination technology to produce EDC. In direct chlorination technology, EDC is produced by the exothermal reaction of chlorine and ethylene in a liquid EDC phase.

The **steam generation plant** consists of three natural gas fired boilers (EIQ Nos. 07-78, 08-78, and 09-78). Boiler F-1 (EIQ No. 07-78), which is fired from natural gas and hydrogen generated from the Chlor-Alkali plant, produces steam only. Boilers F-5 and F-6 (EIQ Nos. 09-78 and 08-78, respectively) are fired with natural gas, hydrogen, and vent gas for which they serve as a vent control device in addition to producing steam. The exhaust from Boilers F-5 and F-6 is routed through the FGD Scrubber (36C-2) to remove hydrogen chloride and chlorine generated from the combustion of the vent gas stream. All boilers combined have the potential to produce 550,000 lbs/hr of steam.

This is the initial Part 70 operating permit for the OxyChem Convent Facility.

III. PROPOSED PERMIT / PROJECT INFORMATION:

Proposed Permit

OxyChem submitted an initial Title V application and Emission Inventory Questionnaire (EIQ) on October 15, 1996. An updated Title V application and EIQ were submitted on April 21, 2005. Additional information was received on August 8, August 31, November 4, and November 16, 2005.

Project description

In this initial Part 70 operating permit, OxyChem proposes to:

- Increase the Chlor-Alkali production rates by adding 12 new production cells (10% increase);
- Propose the future construction of two new boiler off gas scrubbers to replace the current scrubber, FGD Scrubber (36C-2). The proposed off-gas scrubbers would each be able to serve Boilers F-5 and F-6 (EIQ Nos. 8-78 and 9-78, respectively);

- Add the following emission sources to the permit:
  - Wastewater related emissions (EIQ No. 44-96);
  - Cooling water tower (EIQ No. 49-97);
  - Diesel Engines emissions (EIQ No. 50-02);
  - Cell Renewal Glove Box Vent emissions (EIQ No. 52-02);
  - Strong Acid Tanks (EIQ Nos. 53-05 and 54-05);

- Remove the following emission sources from the permit:
  - Ammonia Scrubber (EIQ No. 6-78);
  - Coal handling units (EIQ Nos. 10-78, 11-78, 12-78, and 16-78);
  - Pilot plant units (EIQ Nos. 24-90 and 25-90);

- Remove Diesel Pump Systems (EIQ No. 51-02) as a point source and incorporate it into Diesel Engines (EIQ No. 50-02);

- Reclassify previously permitted emission point sources (EIQ Nos. 14-78, 15-78, 33-94 to 42-94, 47-97, and 48-97) as emission sources routed to Boilers F-6 and/or F-5 (EIQ Nos. 8-78 and/or 9-78, respectively) for emissions control;

- Move the Diesel Storage Tank (EIQ No. 19-78) to insignificant activities;

- Eliminate the option of using coal and fuel oil as alternative fuels for Boilers F-1, F-6, and F-5 (EIQ Nos. 7-78, 8-78, and 9-78);

- Remove Marine Loading Fugitive Emissions (EIQ No. 23-89) as a point source and incorporate it into Plantwide Fugitive Emissions (EIQ No. 22-85);

- Reconcile emissions as a result of re-examining the "potential-to-emit" for several emission sources and/or updating calculations to reflect more recent emission factors, test data, and operating experience;

- Combine the emissions from Boilers F-1, F-6, and F-5 (EIQ Nos. 7-78, 8-78, and 9-78) and the Carbonation Towers (EIQ Nos. 17-78 and 18-78) into an emissions cap, Boiler Emission Cap (EIQ No. CAP01-05), for operational flexibility; and

- Update the General Condition XVII and Insignificant Activity lists.

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Permitted Air Emissions

Estimated changes in permitted emissions in tons per year (TPY) are as follows:

Pollutant	Before*	After**	Change***
PM_{10}	78.49	20.45	- 58.04
SO_2	679.12	2.60	- 676.52
NO_X	1,383.10	450.40	- 932.70
CO	199.94	37.88	- 162.06
VOC	29.76	22.88	- 6.88

* The Before totals are the totals from Permit No. 2160-00019-04

** The After totals are the totals from the updated Part 70 permit application dated April 21, 2005.

*** The Change in permitted emissions is due to re-examining the "potential-to-emit" for several emission sources and/or updating calculations to reflect more recent emission factors, test data, and operating experience.

Prevention of Significant Deterioration (PSD) Applicability

For all sources affected by the project to add 12 new chlorine production cells, the emissions increases, except for the boilers (Source IDs 7-78, 8-78, and 9-78), were calculated by comparing the past two years' actual emissions to the proposed allowable emissions after the project. For the boilers, the project related net emissions increases were based on the incremental operating rate increase that will result from the addition of the 12 new cells.

A comparison of the estimated project related emissions increases (tons/yr) to the significance threshold rates by pollutant was performed and is summarized below.

Pollutant	Project Related Emissions Increase	PSD Significance Thresholds	Threshold Exceedance
PM/PM_{10}	2.42	25/15	**No**
SO_2	0.15	40	**No**
NO_X	35.25	40	**No**
CO	4.01	100	**No**
VOC	3.34	40	**No**

The overall project related emission increases of PM/PM10, SO2, NOx, CO, and VOC do not exceed their respective PSD significance thresholds. PSD netting analysis and PSD review are therefore not required.

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Non-Attainment New Source Review (NNSR)

The OxyChem Convent Facility is located in St. James Parish, which is designated as attainment for ozone. NNSR regulations, therefore, do not apply.

Type of Review

This application was reviewed for compliance with the Louisiana Part 70 operating permit program, Louisiana Air Quality Regulations, New Source Performance Standards (NSPS), and National Emission Standards for Hazardous Air Pollutants (NESHAP). Prevention of Significant Deterioration (PSD) and Non-Attainment New Source Review (NNSR) regulations do not apply.

MACT requirements

The OxyChem Convent Facility is a major source of criteria air pollutants, but is not a major source of toxic air pollutants (TAPs) or hazardous air pollutants (HAPs). The OxyChem Convent Facility is therefore not subject to the Maximum Achievable Control Technology (MACT) standards of LAC 33:III.Chapter 51 for TAPs, nor to any of the promulgated EPA 40 CFR 63 MACT standards, but must comply with all applicable provisions of LAC 33:III.Chapter 51.

Air Modeling Analysis

Dispersion Model(s) Used: None

Pollutant	Time Period	Calculated Maximum Ground Level Concentration	Louisiana Air Quality Standard (NAAQS)
N/A			

Impact on air quality from the OxyChem Convent Facility will be below the National Ambient Air Quality Standards (NAAQS) and the Louisiana Ambient Air Standards (AAS) beyond industrial property. No air modeling analysis is required.

General Condition XVII Activities

The facility will comply with the applicable General Condition XVII Activities emissions as required by the operating permit rule. However, General Condition XVII Activities are not subject to testing, monitoring, reporting or recordkeeping requirements. For a list of approved General Condition XVII Activities, refer to Section VIII of the draft Part 70 permit. These releases are small and will have an insignificant impact on air quality.

Regulatory Analysis

The applicability of the appropriate regulations is straightforward and provided in the Facility Specific Requirements Section of the draft permit, or where provided, Tables 2, 3 and 4 of the draft permit. Similarly, the Monitoring, Reporting and Recordkeeping necessary to demonstrate compliance with the applicable terms, conditions and standards are provided in the Facility Specific Requirements Section of the draft permit, or where provided, Tables 2, 3, and 4 of the draft permit.

IV. PERMIT SHIELDS

Not applicable.

V. PERIODIC MONITORING

There are specific conditions that require periodic monitoring. Monitoring is required for compliance with the Cap requested. All periodic monitoring is conducted in accordance with state and federal regulations. See Facility Specific Requirements of the draft Part 70 permit for monitoring requirements.

VI. APPLICABILITY AND EXEMPTIONS OF SELECTED SUBJECT ITEMS

ID No:	Requirement	Notes
OxyChem Convent Facility	LAC 33:III.5109 Emission Control and Reduction Requirements and Standards	**DOES NOT APPLY.** The OxyChem Convent Facility does not meet the definition of a "major source" as defined in LAC 33:III.5103.A; the requirements of this Section 5109 do not apply, but the requirements of LAC 33:III.5105.A; 5107.A, B, and C; 5111.A.4; and 5113 apply since the facility was a major source upon promulgation of LAC 33:III.Chapter 51, Subchapter A, but has achieved minor source status through reduction of emissions and reduction of potential to emit. [LAC 33:III.5101.A]

ID No:	Requirement	Notes
(continued) Oxychem Convent Facility	40 CFR 61 Subpart FF National Emission Standards for Benzene Waste Operations	**EXEMPTION CRITERIA MET.** Total annual benzene quantity in wastestream is less than 10 megagrams per year (11 tons/yr). [40 CFR 61.342(a)] The total annual benzene quantity in wastestream is less than 1 megagrams per year (1.1 tons/yr).
	40 CFR 61 Subpart F National Emission Standards for Vinyl Chloride	**DOES NOT APPLY.** Facility does not produce EDC by reaction of oxygen and hydrogen chloride with ethylene. [40 CFR 61.60(a)(1)] Facility produces EDC by the direct chlorination process.
	40 CFR 63 Subpart F National Emission Standards for Organic Hazardous Air Pollutants (OHAPs) From the Synthetic Organic Chemical Manufacturing Industry (SOCMI)	**DOES NOT APPLY.** Facility does not meet the definition of a "major source" as defined in section 112(a) of the Clean Air Act Amendments. [40 CFR 63.100(b)(3)]
	40 CFR 63 Subpart G OHAPs from SOCMI Process Vents, Storage Vessels, Transfer Operations, and Wastewater	**DOES NOT APPLY.** Facility does not meet the definition of a "major source" as defined in section 112(a) of the Clean Air Act Amendments. [40 CFR 63.100(b)(3)]
	40 CFR 63 Subpart H National Emission Standards for OHAP Equipment Leaks	**DOES NOT APPLY.** Facility does not meet the definition of a "major source" as defined in section 112(a) of the Clean Air Act Amendments. [40 CFR 63.100(b)(3)]
07-78 F-1 Boiler **17-78** Carbonation Tower (38C-2) **18-78** Carbonation Tower (38C-1)	LAC 33:III.1503.C Emission Standard for Sulfur Dioxide	**EXEMPTION CRITERIA MET.** "All other sources" emitting <250 tpy of SO_2 may be exempted from the 2,000 ppm(v) limitation. [LAC 33:III.1503.C] Facility emits 2.60 tpy of SO_2.

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ID No:	Requirement	Notes
08-78 F-6 Boiler **09-78** F-5 Boiler	LAC 33:III.1503.C Emission Standard for Sulfur Dioxide	**EXEMPTION CRITERIA MET.** "All other sources" emitting <250 tpy of SO_2 may be exempted from the 2,000 ppm(v) limitation. [LAC 33:III.1503.C] Facility emits 2.60 tpy of SO_2.
	40 CFR 64 Compliance Assurance Monitoring (CAM)	This source shall comply with all applicable requirements of Compliance Assurance Monitoring (CAM) 40 CFR Part 64. OxyChem has submitted a CAM Plan to LDEQ pending approval. Once approved, OxyChem shall comply with all provisions included in the approved Compliance Assurance Monitoring (CAM) plan. [40 CFR 64.2]
22-85 Plant-wide Fugitives	40 CFR 60 Subpart VV Equipment Leaks for SOCMI	Permittee shall comply with 40 CFR 60 Subpart VV, LAC 33:III.2121, and 40 CFR 264 Subparts BB & CC by implementing the Louisiana Consolidated Fugitive Emission Control Program. Compliance is achieved through compliance with 40 CFR 63 Subpart H (HON). [40 CFR 60.480, LAC 33:III.2121.A, LAC 33:III.501]
EDC Reactors	40 CFR 60 Subpart RRR Standards of Performance for VOC Emissions from SOCMI Reactor Processes	**DOES NOT APPLY.** EDC Reactors were not constructed, modified, or reconstructed after December 30, 1983. [40 CFR 60.7000(b)] EDC Reactors were constructed in April 1981.

ID No:	Requirement	Notes
EDC Distillation Unit	40 CFR 60 Subpart NNN Standards of Performance for VOC Emissions from SOCMI Distillation Operations	**DOES NOT APPLY.** Distillation Unit was not constructed, modified, or reconstructed after June 29, 1990. [40 CFR 60.660(b)] Distillation Unit was constructed in April 1981.
FGD Scrubber	40 CFR 64 Compliance Assurance Monitoring (CAM)	This source shall comply with all applicable requirements of Compliance Assurance Monitoring (CAM) 40 CFR Part 64. OxyChem has submitted a CAM Plan to LDEQ pending approval. Once approved, OxyChem shall comply with all provisions included in the approved Compliance Assurance Monitoring (CAM) plan. [40 CFR 64.2]

VII. STREAMLINED REQUIREMENTS

Unit or Plant Site	Programs Being Streamlined	Stream Applicability	Overall Most Stringent Program
22-85 Plant-wide Fugitives	40 CFR 63 Subpart H - HON SOCMI MACT	5% VOHAP	40 CFR 63 Subpart H - HON SOCMI MACT Phase III
	LAC 33:III.2121 - VOC Control	10% VOC	
	40 CFR 60 Subpart VV - NSPS	10% VOC	
	40 CFR 264 Subpart BB & CC - RCRA	> 100 ppm VOC	

VIII. GLOSSARY

Best Available Control Technologies (BACT) - An emissions limitation (including a visible emission standard) based on the maximum degree of reduction for each pollutant subject to regulation under this part which would be emitted from any proposed major stationary source or major modification which the administrative authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel

cleaning or treatment or innovative fuel combustion techniques for control of such pollutant.

Carbon Monoxide (CO) – A colorless, odorless gas which is an oxide of carbon.

Grandfathered Status - Those facilities that were under actual construction or operation as of June 19, 1969, the signature date of the original Clean Air Act. These facilities are not required to obtain a permit. Facilities that are subject to Part 70 (Title V) requirements lose grandfathered status and must apply for a permit.

Hydrogen Disulfide (H_2S) - A colorless inflammable gas having the characteristic odor of rotten eggs, and found in many mineral springs. It is produced by the action of acids on metallic sulfides, and is an important chemical reagent.

Maximum Achievable Control Technology (MACT) - The maximum degree of reduction in emissions of each air pollutant subject to LAC 33:III.Chapter 51 (including a prohibition on such emissions, where achievable) that the administrative authority, upon review of submitted MACT compliance plans and other relevant information and taking into consideration the cost of achieving such emission reduction, as well as any non-air-quality health and environmental impacts and energy requirements, determines is achievable through application of measures, processes, methods, systems, or techniques.

New Source Review (NSR) - A preconstruction review and permitting program applicable to new or modified major stationary sources of air pollutants regulated under the Clean Air Act (CAA). NSR is required by Parts C ("Prevention of Significant Deterioration of Air Quality") and D ("Nonattainment New Source Review").

Nitrogen Oxides (NO_x) - Compounds whose molecules consists of nitrogen and oxygen.

Nonattainment New Source Review (NNSR) - A New Source Review permitting program for major sources in geographic areas that do not meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. Nonattainment NSR is designed to ensure that emissions associated with new or modified sources will be regulated with the goal of improving ambient air quality.

Organic Compound - Any compound of carbon and another element. Examples: Methane (CH_4), Ethane (C_2H_6), Carbon Disulfide (CS_2)

Part 70 Operating Permit - Also referred to as a Title V permit, required for major sources as defined in 40 CFR 70 and LAC 33:III.507. Major sources include, but are not limited to, sources which have the potential to emit: $\geq$ 10 tons per year of any toxic air pollutant; $\geq$ 25 tons of total toxic air pollutants; and $\geq$ 100 tons per year of regulated

pollutants (unless regulated solely under 112(r) of the Clean Air Act) (25 tons per year for sources in non-attainment parishes).

PM_{10} - Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by the method in Title 40, Code of Federal Regulations, Part 50, Appendix J.

Potential to Emit (PTE) - The maximum capacity of a stationary source to emit any air pollutant under its physical and operational design.

Prevention of Significant Deterioration (PSD) – A New Source Review permitting program for major sources in geographic areas that meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. PSD requirements are designed to ensure that the air quality in attainment areas will not degrade.

Sulfur Dioxide (SO_2) – An oxide of sulfur.

Title V permit – See Part 70 Operating Permit.

Volatile Organic Compound (VOC) - Any organic compound which participates in atmospheric photochemical reactions; that is, any organic compound other than those which the administrator of the U.S. Environmental Protection Agency designates as having negligible photochemical reactivity.